

ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS

VOL. 15 NO. 24

Friday, December 3, 1976

Pollution at JSC tolerable

Air pollution in the JSC area remained well within the Environmental Protection Agency (EPA) national primary standards during the first half of 1976.

That status report on the ambient air quality at JSC was given by a representative of the Life Sciences Directorate at a recent meeting of the JSC Pollution Control Committee.

The Life Sciences Directorate is conducting a continuing ambient air monitoring program measuring suspended particulate matter and photochemical oxidants.

The Houston area has been designated by the EPA as an Air Quality Maintenance Area, meaning it has potential for exceeding the national standards in the next 10 years.

The EPA national primary standards are 75 micrograms per cubic meter of particulate matter as an annual geometric mean and 260 micrograms per cubic meter as a maximum for a 24-hour period. Primary standard for photochemical oxidants is 0.08 parts per million for a 1-hour period.

Analyses indicated the average concentration of particulate matter in 24-hour air samples collected at JSC during the first half of 1976 was 49 micrograms per cubic meter as a geometric mean. Highest concentration detected during the period was 136 micrograms per cubic meter.

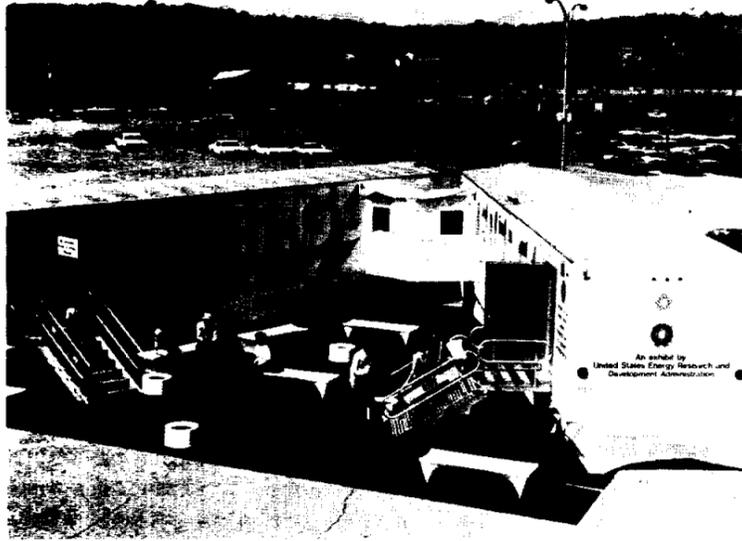
The highest 1-hour concentration of photochemical oxidants measured was 0.05 parts per million.

Mars channel theory: thin lava, not water

Thin lava, not water, may have caused the large channels on Mars, a scientist at the Johnson Space Center says.

In a paper to be presented at the December meeting of the American Geophysical Union in San Francisco, Ernest Schonfeld says the Martian channels could have been formed by a thin, runny, turbulent lava rather than torrents of water proposed by other scientists.

Schonfeld, a lunar scientist working at JSC's Division of Lunar and Planetary Sciences, says the creation of large channels is probably easier to explain with lava than with water. The abundant large channels are one of the most puzzling landforms on Mars. Previous



ENERGY EXHIBIT — The Energy Research and Development Administration's traveling energy information exhibit is housed in these two 50-foot trailers which will be parked at Bldg. 14, Dec. 3-15. Inside are dozens of displays, films and visitor-operated consoles.

Traveling exhibit on display here presents energy crisis, solutions

ENERGY, a free exhibit for those who want a better understanding of the energy crisis and what can be done about it, will open at JSC Dec. 3.

The exhibit is housed in two 50-foot trailers which will be parked on the Bldg. 14 parking lot through Dec. 15.

The trailers are filled with animated displays, films and visitor-operated consoles. A specially trained educator from the American Museum of Atomic Energy in Oak Ridge, Tenn., will be available to answer questions.

ENERGY is a major educational exhibit of the U.S. Energy Research and Development Administration (ERDA). ERDA operates several traveling exhibits in the eastern United States from the American Museum of Atomic Energy.

All types of energy currently in

use are covered by the exhibit. So are possible future energy sources. Thus by seeing ENERGY the visitor can gain an overall picture of the nation's energy problems and their effect on America's standard of living.

For example, present natural gas supplies are expected to be depleted within 15 to 40 years, and several exhibits explain how additional natural gas can be obtained from the nation's huge coal reserves.

Petroleum, the mainstay of America's transportation and a major fuel for generating electric power, is expected to be exhausted in about 50 years. But, as one ex-

hibit explains, petroleum may be obtained from the processing of oil shale.

Several other exhibits demonstrate the principles of uranium fission nuclear reactors currently generating electricity around the country. Those being studied for future use, such as the breeder reactor which would make more fuel than it consumes, and the hydrogen fusion reactor which would operate on the same principle as the Sun, are also demonstrated.

Through other exhibits, visitors may observe the process of developing power through magnetohydrodynamics, a sort of "supercharger" for conventional power generators.



PEOPLE-POWERED GENERATOR — One way to learn about energy is to make some yourself and that is just what this youngster is doing inside ERDA's traveling exhibit ENERGY.

Christmas project aids needy families

The Family Affair Christmas Project — an annual fund-raising campaign to assist needy families — will kickoff Dec. 6. This year's goal is \$3,000.

"Meeting the goal is not the most important mandate," emphasized Julius Mayhorn, project chairman. "It's what meeting the goal will allow us to accomplish that is most significant."

The number of assisted families has increased considerably since the project was initiated by a group of JSC and contractor employees in 1971. That year, the group raised

\$500 and provided food and toys to 22 families. In 1975, the group raised \$3,000 and was able to help 103 families. This Christmas season, they plan to assist 110 families.

Mayhorn attributes the continued success of the project to the "generosity of the JSC and contractor community."

Families are selected from a number of sources including JSC and contractor personnel, Harris County Community Action Association and other charitable organizations.

The group's primary objective is to assist low-income families during the Christmas season; however, other projects, such as purchasing shoes for needy children during Easter and assisting families during emergencies, have also become annual endeavors.

Employees who have not been contacted by project area coordinators and who would like to make contributions should contact Mayhorn, X-3381 or 3382, Mail Code FD6. The fun drive will end December 14, 1976.

New EAA officers are chosen

Stan Weiss of the Structures and Mechanics Division has been elected president of the Employees Activities Association.

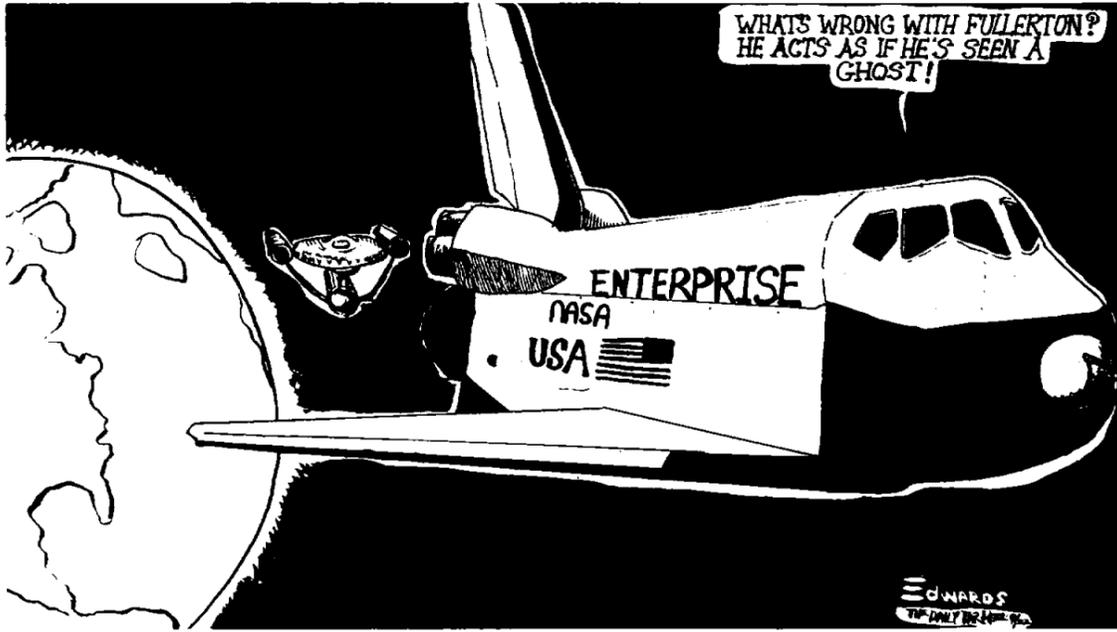
Weiss was chosen to succeed Jim McBride at the 14th General Assembly meeting of EAA district representatives on Nov. 2.

Other new executive board members elected were Liz Bolt, treasurer, replacing Weiss; Sandy Burdsal, secretary, replacing Ursula Nuechtern; Art Booth, vice president for facilities, replacing Jerry Jones; Susy Cour-Palais, vice president for youth activities, replacing Donna Tarpley, and Larry McWorter, vice president for athletics, replacing Jack Boykin.

Newly-elected members assume office Jan. 1.

Members continuing in office for another year are Frances Barbee, executive vice president; Geraldine Taylor, vice president for organized clubs; Rachel Windham, vice president for publicity and promotions, and Glenda Lancon, vice president for social activities.

Ballots have been distributed for the election of district representatives to the 15th General Assembly of the EAA. All ballots are due back to the election supervisor in each district by 4 p.m. Tuesday, Dec. 7.



By Allen Edwards. Reprinted by permission of the Daily Tar Heel, University of North Carolina at Chapel Hill.

Apollo-Soyuz blood experiment leads to leukemia treatment

A scientific experiment aboard last summer's joint U.S.-Soviet Apollo Soyuz flight, may lead to improved methods of treating leukemia.

The new process resulted from the electrophoresis scientific experiment aboard the flight. In the experiment, certain blood cells were separated by the electrophoresis process under the weightless conditions of space flight.

A new application of techniques developed through the experiment may make it easier to perform transfusions of a certain type of white blood cell in the treatment of leukemia.

The experiment required that after the separation process was carried out the cells would be frozen in a medium that contained no chemicals toxic enough to pose any potential hazard to the crew in the spacecraft.

The cells, called granulocytes,

combat infections in humans by attacking and eating invading bacteria. The transfusion of the cells to a patient is used to maintain resistance to infection in cases where the granulocytes are not produced. Donors of the cells must be close relatives of the patient and the timing of transfusions is important because the lifetimes of the granulocytes in the patient's blood are limited.

Dr. Carel J. Van Oss of the State University of New York at Buffalo has found that the preservative medium developed for the ASTP mission when used to freeze granulocytes may improve their survivability. This would make it possible to build up a stock of frozen cells contributed by donors at their convenience, so that the transfusions would be available when and as the patient needed them. This would reduce granulocyte transfusion from a complicated operation to a

routine procedure that could be managed for optimum control over the patient's condition.

The freezing medium would have been developed in time without being a part of a space experiment. However, the space program made it available sooner.

Houston Chamber lauds JSC's Eugene Horton

A JSC employee has earned a letter of commendation from the Houston Chamber of Commerce for his role in the preparation of a projections study for the City of Houston and its environs looking to the year 2000.

Eugene E. Horton, who serves as a member of both the Civic Affairs Committee and the Future Studies Committee of the Houston Chamber of Commerce, was recognized by P.R.M. Brooks, chairman of the Future Studies Committee, and George F. Pierce Jr., vice chairman, "for contributing so signifi-

cantly to the extremely successful year of achievement just completed."

The Future Studies Committee is comprised of business executives and government officials concerned with the impact of growth and change on the future of Houston.

Horton "cooperated in a major public service which will benefit the entire Houston region far into the future," Brooks said.

Horton is an employee development specialist assigned to the Personnel Office at JSC.

Aleck C. Bond, assistant director for program support, Engineering and Development Directorate, has been named general chairman for the second annual Technical Mini-symposium of the Houston section, American Institute of Aeronautics and Astronautics.

There will be no restrictions on the technical disciplines involved in the papers presented at the mini-symposium which will be held March 22, 1977, at the Gilruth Recreation Center.

Papers can be either research or applications oriented. Authors must submit written abstracts of the proposed papers. Written versions of the total paper are optional.

Abstracts should be sent no later than Jan. 14, 1977, to Thomas B. Murtagh, Mail Code FM17.

Abstracts should not exceed 200 words and should contain a complete title of the proposed paper, name of the author or authors, job title and company affiliation (including department and address), a concise statement of the problem and a summary of important conclusions.

Authors will be notified by Feb.

14, 1977, if their proposed paper has been selected.

In order to facilitate JSC personnel participation in the symposium, JSC has waived the normal approval procedure for technical papers and has delegated approval authority to division and office chiefs.

General format of the mini-symposium will be parallel technical sessions allowing 15 minutes for each paper.

For further information, contact Bond, X-3971, or Murtagh, X-6181.

Roundup schedule changed

Due to the Christmas and New Year's holidays, the Roundup will not be published on Dec. 31. That issue has instead been postponed until Jan. 7.

Publication dates will be Dec. 17, Jan. 7, Jan. 21 and every second Friday thereafter.

Please arrange for submission of news and advertising copy to accommodate these dates. Information on articles or Swap Shop ads should be received by the Roundup office (AP3) by Thursday, eight days prior to publication, unless otherwise arranged with the editor.



Setting it straight

The Boeing contract for space-based solar power concepts study has a potential value of \$970,000, not an actual value as implied in the Roundup article of Nov. 19.

Only \$300,000 is firm to the study and represents NASA funds appropriated for the contract. The remaining \$670,000 is an option which the Energy Research and Development Administration has not yet exercised.

Astronomical photo meeting set Dec. 9

Special techniques of astronomical photography will be discussed at a joint meeting Dec. 9 of the JSC Camera Club and the Houston chapter, Society of Photographic Scientists and Engineers.

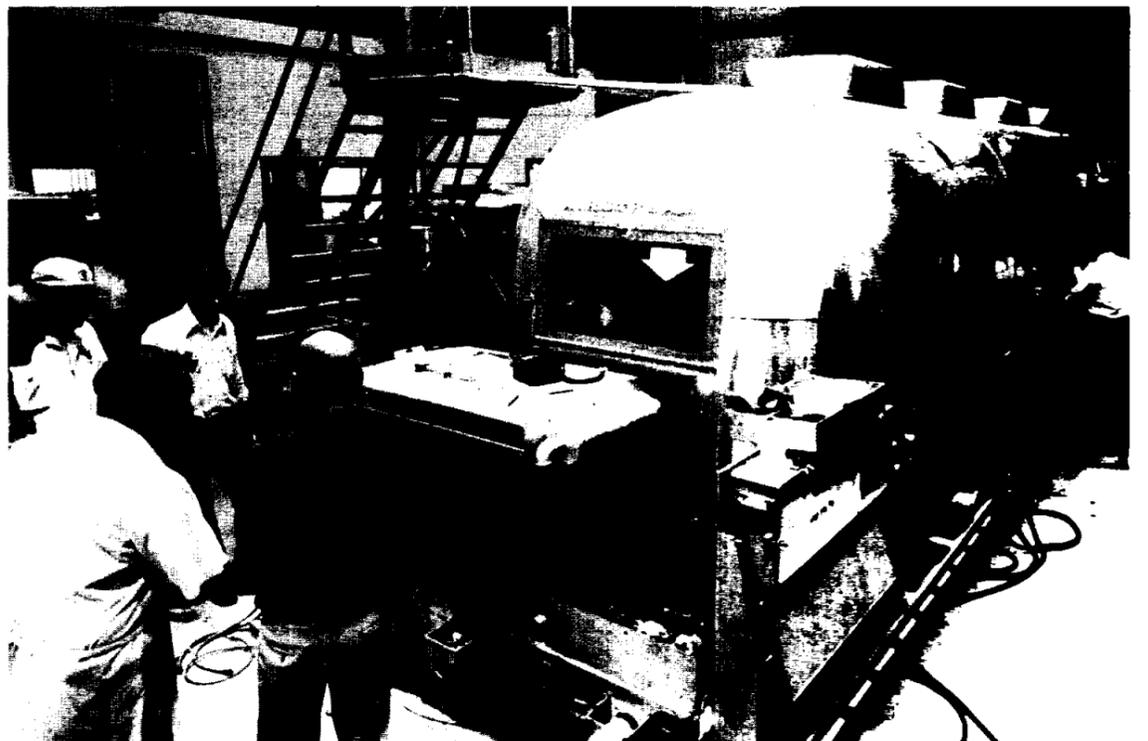
Dr. Ted Gull, a Lockheed Electronics Co. principal engineer in the Lunar and Planetary Sciences Division, will be guest speaker at the 7:30 p.m. meeting at the Lunar Science Institute. His topic will be "Photographic Applications for Astronomy."

Gull is responsible for conduct-

ing design studies of the one-meter class Space Shuttle telescopes to evaluate structural feasibility, scientific advantages and cost impact of focal plane configurations.

He has held positions at Cerro Tololo International Observatory, Kitt Peak National Observatory, Yerkes Observatory and the National Radio Astronomy Observatory.

The meeting will be free and open to the public. For further information, contact H. Lockwood, X-5489, or Dave Heath, X-4802.



NEW LIFE FOR MQF — Technicians ready an Apollo Mobile Quarantine Facility (MQF) for airlift to the Public Health Service Center for Disease Control in Atlanta. The MQF had been on standby alert for several weeks for possible airlift to Africa to evacuate World Health Organization medical teams looking into outbreaks of the Marburg-like "green monkey" disease in Zaire and the Sudan. Used for isolating returning

lunar explorers in the first three Apollo lunar landing missions, the MQFs served as a portable environment and biological barrier in which to transport flight crews from recovery vessels to the crew quarters in the JSC Lunar Receiving Laboratory. The MQF in the photo was airlifted November 19 to Atlanta after JSC transferred permanent ownership of the facility to CDC.

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Photographer: A. "Pat" Patnesky

EAA ATTRACTIONS



NOW JUST SCRAP METAL — The 110-foot tower at Pad 14, above, was demolished this week at Cape Canaveral and put up for bids as scrap metal. This photograph was taken Aug. 16, 1961 during a pre-flight checkout of Mercury-Atlas 4. The unmanned orbital flight was launched Sept. 13, 1961. The spacecraft entered a 142-mile orbit for a flight duration of 1 hour, 49 minutes and 20 seconds.

AF demolishes Pad 14 tower

The rusting tower on historic Pad 14 at Cape Canaveral — from which John Glenn was launched into space as America's first man in orbit 14 years ago — was demolished Wednesday.

The 110-foot-tall, 250-ton steel gantry was in use from the first Atlas Missile launches in 1957 through unmanned Atlas-Agena missions in 1966.

Mercury Astronauts Glenn, Scott Carpenter, Walter Schirra and Gordon Cooper all were launched into orbit from Pad 14 during the glory days of the space program.

The tower, and a similar structure at Pad 12 which was used for launching numerous satellites and unmanned probes, have now been toppled into dense brush which has grown up around the unused pads.

The two towers are part of launch complexes which cost \$5 million each to construct. Air Force officials said the demolished gantries will be put up for bids as scrap metal.

TICKETS

The following tickets are available at the Bldg. 11 Exchange Store from 10 a.m.-2 p.m., Monday-Friday:

Houston Aeros — EAA discount gift coupons may be exchanged at the Summit box office for "live" tickets on the night of the game. A \$6.50 coupon gets you an \$8 ticket, \$5.50 gets a \$7.50 ticket and \$4 gets a \$5 ticket. Aeros play Edmonton, Dec. 3, Phoenix, Dec. 14, Quebec, Dec. 17 and New England, Dec. 21.

ABC Interstate Theaters — \$1.50 admission tickets.

Dean Goss Dinner Theater — Comedy production, *Opal's Baby*, \$16/couple. Tickets available every night except Monday, Saturday.

Disney Magic Kingdom Club — Free membership cards.

Sea-Arama Marineworld — Tickets on sale, \$3.75 for adults, \$2.50 for children. Open until dusk year-round.

Windmill Dinner Theater — \$14/couple for *Beginner's Luck* starring Bob Crane. Tickets available for Weds-Thurs-Sun only.



CHILDREN'S PARTY

The 1976 JSC Children's Party will be held Dec. 18, 1-3 p.m., in the Bldg. 2 auditorium. Children aged 2-10 will be entertained for only \$1.50 each. Tickets on sale at the Bldg. 11 Exchange Store.

The party will offer gifts for the kids, cartoons, and Christmas music. Photos will be available with Santa Claus.



JSC RUNNERS ORGANIZE

The JSC Runners first center-wide competition is tentatively scheduled for Dec. 14 at 5 p.m. at the Clear Lake H.S. track. Runners may compete in a one-mile and/or

two-mile event. Membership in the group will be required to participate. Contact Tim Kincaid at X-3594 if you are interested.

The JSC Runners first meeting was attended by only 8 people but they represented an additional 15 who did not attend plus another 12 who filled out the initial questionnaire prior to the meeting. A planning committee was established and will work with the Recreation Director in scheduling future events.



BASKETBALL SEASON

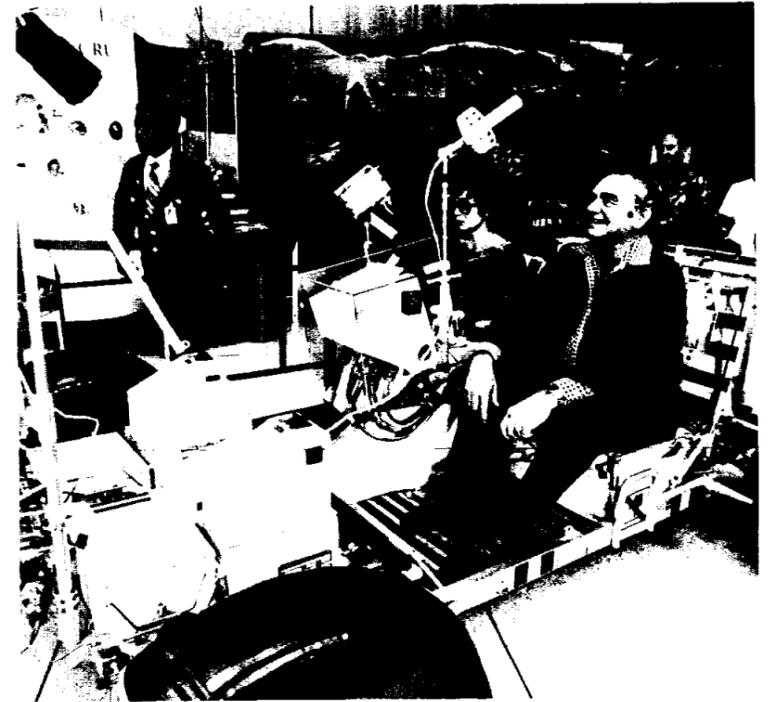
The 1977 basketball season will open with a seven-week season running from Jan. 3 to Feb. 25. Teams interested in playing in this league should enter between Dec. 13-24. Blank rosters are to be filled out and turned in with the \$80 team entry fee no later than the Dec. 24 closing date.

Team captains should be aware that the player classification system established in October will go into effect with the start of this season. Captains needing a criteria sheet for this classification system may obtain one from the office of the recreation director. The EAA Athletics Competition Committee will make available a list of players' names and their classifications before Dec. 13.



REC CENTER CLOSURES

The Gilruth Recreation Center will be closed to regular use due to special activities on the following dates and times: Dec. 3, gym, all day for EAA Christmas Dance; Dec. 4, building, for dance; Dec. 9 and 16, gym, 8 a.m.-4 p.m. for Lockheed Blood Drive; Dec. 17, 1 p.m. for Serv-Air Childrens Party; Dec. 18, gym.



SMILING STAR — Oscar-winning actor Ernest Borgnine, right, is the latest in a long line of VIPs to pose for photographs in the Lunar Rover at Bldg. 2. Borgnine, 58, won the Academy Award for best actor in 1955 for his title role performance in the film "Marty." He is perhaps better known to television viewers for his starring role in the long-running comedy series "McHale's Navy."

Roundup Swap Shop

Swap Shop advertising is open to JSC federal and on-site contractor employees. Goods or services must be offered as advertised, without regard to race, religion, sex or national origin. Non-commercial personal ads should be 20 words or less, and include home telephone number. Typed or scribbled ad copy must be received by AP3/Roundup by Thursday of the week prior to publication.

CARS & TRUCKS

- 73 Toyota Corolla. Air, 4-dr, 4-spd, 1 owner. \$250 below NADA. Wilson, X-3803 or 488-7169 after 5:30.
- 71 Ford Mustang. V8, auto, pwr str, air. XInt cond, see to apprec. 488-2822.
- 70 Dodge Coronet. 318-V8, 4-dr, air, pwr, new 5-yr batt, new fuel & water pumps, 1 owner. Johnson, 946-7036.
- 72 Chevy Nova 307. 4-dr, pwr str, auto, air, radio, tinted glass, 50K miles, good cond. 944-5965 after 5.
- 75 Chevy Malibu 3-seat sta wgn. Air, AM/FM/tape, pwr seat, tilt, cruise cntl, more, xInt cond. \$3,850. 333-3948
- 71 Grand Prix 400. Pwr, low miles, clean, runs good. 1,750. 941-4424 evngs.
- 73 Mustang Mach 1. 351-2V eng, auto, air, radio. \$2,400. Springer, X-3731 or 488-7298 after 5:30 weekdays.
- 70 Plym Fury II. 4-dr, 318, auto, pwr, air, radio, tape, 69K mi, mech good, body rust. \$500. Cockrell, 488-2767.
- 74 Winnebago Motorhome. Sleeps 6, dash & roof air, 5 kw generator, cruise cntl, 29K mi. \$11,700. 488-2329.
- 73 Lincoln. 4-dr, full pwr, loaded, xtra clean. 488-7602.

CYCLES

- 74 Honda CL125. Special swing arm, Fox shocks & gas forks. XInt cond. 482-6357.

- 75 Honda 750SS. Windjammer III fairing, mint cond, 6,500 mi. \$1,650. 488-3319 after 5.
- 73 Suzuki TS400. 7,500 mi. \$600 cash. Smith, X-4564 or 334-3429 after 2.
- 75 XR75. XInt cond, racing pipe & air filtr. \$350. 333-3648 evngs.
- 73 Honda CB350-4. \$700. 481-2331 after 5:30
- Huffy "Silver Thunder" Moto-cross bicycle. Like new, xInt cond. Cost \$85, sell \$65. 554-3754.
- Boys' bikes. 24-in for \$15, 24-in for \$20, 20-in for \$20. Handley, X-2271 or 482-7041.

AIRCRAFT

- 74 Skyhawk II. Full IFR, 800 hrs total time since new, Twin KX170B, NAV/COMS, Hobbs meter, boom mike. \$18,500. Poindexter, 474-2203.

PROPERTY & RENTALS

- 3-2-2 brick in Forest Bend. \$325/mo, 1-yr lease. 488-4394.
- Room to let w/kitchen privs. Sage-mont, prefer student. Avail now thru May. \$85/mo. Juday, X-4505.
- Renter wanted to share furn house, Wedgewood. No lease, \$135/mo. Avail 12/23/76. Jeff, 482-5393 after 5.

Winter Park condominium for rent. Ideal for family ski vacation. Sleeps 10. Bargain. 488-7602.

PETS

Eng. Setter pups. Johnny Crockett/Mr. Thor bloodlines. Males, \$125; females, \$100. Bradley, X-3791 or 585-3144.

MUSICAL INSTRUMENTS

Violin, Roth Model 301 w/case. XInt cond. \$150. 333-3665 after 4.

Player piano. Refinished and completely reconditioned, plays perfect. \$975. 488-1890.

STEREOS & CAMERAS

TEAC AN-80 Dolby amp. Eliminates tape hiss, for any tape recorder. \$80. 488-7863.

Fisher X-101-C, 65-watt amp; FM-50B tuner, classic tube type. Superb cond w/walnut cabinets, instr, etc. \$125 for both. 488-3966.

Mono hi-fi system. Scott amp, Fisher AM/FM tuner, Miracord turntable w/grad arm. XInt. \$75 for all. Musgrove, 488-3966.

Two EPI-50 speakers. \$40 ea. Lake, X-3286 or 523-2137.

Polaroid "Clincher" camera, new. Would make ideal gift. 488-2822.

HOUSEHOLD ARTICLES

- Hollywood full size bed. Good cond. \$75. Zill, X-2457.
- Two sofas. \$25 ea. 488-0266.
- Singer zigzag sew mach w/cabinet, good cond, \$125; Herculon couch, \$50; Mediterranean triple dresser w/double-queen headboard, \$125. Haefner, X-5326.
- Sectional sofa, 4-pc, fair cond; dining & bedrm suites, walnut, mar-proof tops, xInt cond. McCafferty, 488-1892.
- Beautiful Apollo-Soyuz cocktail glasses. Sets of 4 or 8. Hayes, 488-1446.
- Sterling silver "Strasborg" by Gorham. 6 pcs, never used 35% less than reg price. Burdsal, X-3091 or 482-2873 after 5:30.

MISCELLANEOUS

- Patio door ensemble, 8-ft wide. Compl w/all hardware. \$80. Reim, 944-3795.
- Aquarium. 10 gal compl w/stand, lite, pump, etc. XInt cond. \$35. 333-3665 after 4.
- Old printers' type drawers. Great for miniatures & other collectibles. \$8. 588-1890.
- Lady Shick Lasting Curls Mist Hair-setter, \$12; Heet-Treet Massager (vibrator & heat), \$5; Boys hockey ice skates, size 5, \$10. All items new cond. 488-4005.
- Breaking up stamp collection. Will accept any reas offers. Sugano, X-6355 or 482-5393 after 5.

WANTED

- 2 or 4 man backpacking tent. 488-0266.
- Small, simple, lightweight Super 8mm movie camera. Single spd, fixed-focus camera w/auto lite meter. Ideal. 334-2906.
- Recent model 8-passenger van. Prefer 350 or equiv eng w/tow package. Kranx, X-3628.
- Car body, 68-72 Plym, Dodge or Chrys. Bad eng/trans OK. Dan, X-4688 or 488-5691.
- Crib, reg size, good cond & complete. 946-5849 after 5.
- Two 26-in bikes, prefer used in reas cond. Kathy, X-2921 or 466-3449.
- 40-75 HP OB motor, prefer 2-3 cyl, good cond. Gordon, X-3319 or 481-3787.
- Female roommate to share 3-bdrm apt. May have child. Honest/reliable. Scott, 483-2315.
- Buy or trade, American Flyer or Lionel trains & access, working or not. 334-3182.

LOST & FOUND

- Watch found on tennis cts approx Oct 26. Call X-2666 to identify.
- Lost man's silver cuff link w/blk setting. Sentimental value. Mayo, 534-3114 after 6.
- Man's gold wedding band lost Nov 10 around Bldg 1 or 17. Reward. Eleanor Johnson, X-5961.

Satellite 'census takers' to identify urban growth

Two NASA satellites now being used to monitor Earth resources may take on the additional task of "census takers" in the 1980 U.S. census.

The Landsat spacecraft have provided test imagery of Austin, Tex., and Prince George's County, Md., which show that the satellites can provide useful information on urban growth and potentially produce a manpower savings.

While Landsat images are not detailed enough for counting people or houses, they are used to identify many geologic, agricultural and societal features, including residential patterns.

Research on the use of satellite data for census applications was begun in early 1975 as a joint technology transfer project by NASA and the U.S. Bureau of Census.

Currently, the Census Bureau defines a fringe zone around every major urban area in the country just before a national census. Each zone is divided into enumeration districts.

During the census, these enumeration districts are defined as "urban" or "rural" and urban area maps are updated accordingly.

Human census takers have been required to do such classification in the past. But the recent tests showed that Landsat may take over some of this responsibility.

Conventional census statistics on the test areas were overlaid to scale on the satellite imagery and the final computerized product was used to identify the urban fringe zones.

Austin proved to be an ideal test site due to the extensive and current field data available from a complete test census conducted there earlier this year.

"The results of our investigation thus far indicate that Landsat information has a practical application to the problem of urban area delineation and to the detection of change," said Jerrold W. Christenson, project scientist at NASA's

Goddard Space Flight Center, Greenbelt, Md.

In 1970, more than 30,000 enumeration districts had to be evaluated for the 252 urbanized areas in the country.

"We hope to predefine a number of enumeration districts with Landsat imagery just prior to the 1980 census," said Richard H. Schweitzer Jr., Census Bureau Project Manager.

"This should help reduce the number of districts to be evaluated right in the middle of the major processing time of the census data," he said.

Schweitzer anticipates the need to review about 48,000 districts in some 300 urbanized areas for the 1980 census.

Based on their ultimate performance in 1980, the robot census takers are expected to be put to work helping chart urban growth in subsequent censuses. According to a law signed by the President Oct. 18, a complete U.S. census is now required every five years.

NASA publishes comprehensive solar system evolution study

A new scientific study dealing with the origin and evolution of the solar system, written by two internationally-known scientists, has been published by the NASA Scientific and Technical Information Office.

Called simply "Evolution of the Solar System," the comprehensive, 599-page volume traces the early history of the solar system, its evolution and describes its present-day characteristics.

Its authors, both professors at the University of California at San Diego, are Dr. Hannes Alfvén, a Nobel Laureate in plasma physics, and Dr. Gustaf Arrhenius, an oceanographer and Earth scientist.

The book's basic thesis is that the complicated events leading to

the present structure of the solar system can be understood only by an integrated chemical-physical approach. The authors state that their purpose is "to make the physics understandable to chemists and the chemistry understandable to physicists."

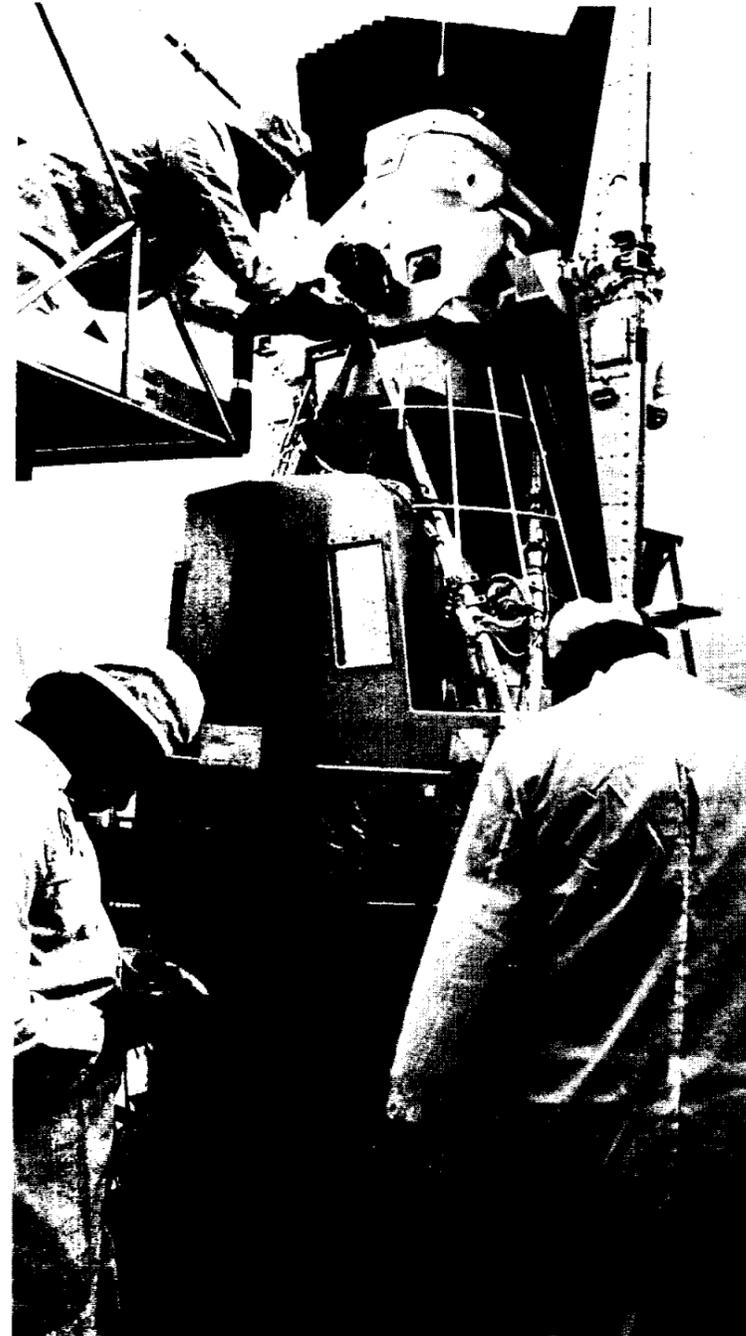
The volume is aimed primarily at upper level physical science majors, graduates and working scientists in the Earth or space sciences who desire a broader perspective of their fields. However, specialists and others interested in the solar system's early history and present-day characteristics will find the volume provides new and challenging insights into the subject.

The book is divided into six sections. They include: Present State

and Basic Laws, The Accretion of Celestial Bodies, Plasmas and Condensation, Physical and Chemical Structure of the Solar System, and a Special Problems section dealing with the evolution of the Earth-Moon system, the early Sun, and

the origin of the Earth's oceans and atmosphere. Thorough cross-referencing and a comprehensive index permits readers to study each section independently.

"Evolution of the Solar System," published as NASA SP-345, is available from The Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Its cost is \$11. The GPO stock number is 003-000-06613-6.



ROBOT CENSUS-TAKER — Landsat-2, the second Earth Resources Technology Satellite, is shown in this January 1975 photo as it was being prepared for launch at the Western Test Range, Lompoc, Calif. Along with Landsat-1, this spacecraft may be used to assist the U.S. Bureau of Census in measuring urban growth.

Photo technique aids in seabed exploration

A photographic technique developed by NASA for use in unmanned planetary exploration and satellite Earth resources monitoring now makes it easier for marine scientists to explore the ocean bottom for mineral wealth and to study its environment and detailed topography.

The technique, called "computer image processing," was developed by planetary scientists at NASA's Jet Propulsion Laboratory at Pasadena, Calif. With the aid of a computer, space scientists remove blemishes, apply radiometric and geometric corrections and improve detail in undersea photographs and side-looking sonar imagery.

Unenhanced deep-sea photographs taken with either normal or wide-angle 35 mm lenses suffer from uneven illumination, or are marked by strobe-shield shadows that require additional time consuming processing.

Computer image processing filters and removes shadows, bringing out the latent features and details not distinguishable by conventional photo processing methods. The process also improves the sharpness of the peripheral areas of photographs so sea-bottom mosaics can be constructed. Similar processing techniques have been success-

fully applied to side-scan sonar imagery.

This use of digital data processing and storage techniques greatly extends the quantity of information that can be handled, stored and processed.

Computer image processing has been used by NASA scientists in remote sensing experiments with the Earth orbiting Skylab and Landsat satellites and various weather satellites, as well as low and high-flying aircraft. Its application to non-space technology is another in a growing list of examples of how space technology is working for the benefit of all mankind.

Aeronutronic changes name

Aeronutronic Ford Corp., a subsidiary of Ford Motor Co., will change its name to Ford Aerospace & Communications Corp., effective Dec. 1.

Officials said that the organizational structure of the corporation will be unchanged, with divisions continuing under two separate components — Aerospace and Communications Operations and Consumer Products Operations.



KRAFT ON CAMERA — CBS network news reporter Morton Dean, seated on right, interviews Center Director Dr. Christopher C. Kraft Jr. for the CBS Evening News with Walter Cronkite. Dean and Kraft talk in the director's office

as the CBS cameraman, right, and soundman, left, record the conversation. During his mid-November trip to JSC, Dean interviewed numerous center officials on topics ranging from Space Shuttle to ALSEP to solar power.